

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica

ANALYTICAL REPORT

Job Number: 280-10749-2

Job Description: PFC Analysis

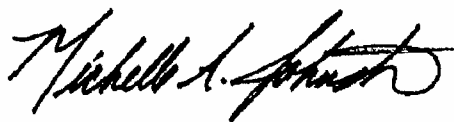
For:

Dalton Utilities

1200 V.D. Parrott Jr. Parkway

Dalton, GA 30721

Attention: Ms. Dena Haverland



Approved for release.
Michelle Johnston
Project Manager I
12/22/2010 4:11 PM

Michelle Johnston

Project Manager I

michelle.johnston@testamericainc.com

12/22/2010

The test results in this report relate only to the samples in this report and meet all requirements of NELAP, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is E87667.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

TestAmerica Laboratories, Inc.

TestAmerica Denver 4955 Yarrow Street, Arvada, CO 80002

tel (303) 736-0100 Fax (303) 431-7171 www.testamericainc.com



Table of Contents

Cover Title Page	1
Data Summaries	4
Report Narrative	4
Manual Integration Summary	6
Sample Summary	10
Executive Summary	11
Method Summary	12
Method / Analyst Summary	13
Sample Datasheets	14
Surrogate Summary	18
QC Data Summary	19
Data Qualifiers	24
QC Association Summary	25
Lab Chronicle	26
Reagent Traceability	28
Organic Sample Data	34
LCMS	34
Method PFC	34
Method PFC QC Summary	35
Method PFC Sample Data	44
Standards Data	58
Method PFC ICAL Data	58
Method PFC CCAL Data	123
Raw QC Data	144
Method PFC Blank Data	144
Method PFC LCS/LCSD Data	153

Table of Contents

Method PFC MS/MSD Data	160
Method PFC Run Logs	174
Method PFC Prep Data	176
Inorganic Sample Data	178
General Chemistry Data	178
Gen Chem Cover Page	179
Gen Chem MDL	180
Gen Chem Analysis Run Log	181
Gen Chem Raw Data	185
Gen Chem Prep Data	186
Shipping and Receiving Documents	196
Client Chain of Custody	197
Sample Receipt Checklist	198

CASE NARRATIVE
Client: Dalton Utilities
Project: PFC Analysis
Report Number: 280-10749-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

The PFC method DV-LC-0012 is an isotope dilution method; therefore, the internal standards are added prior to the extraction process. This technique inherently corrects for variability in the extraction efficiency due to sample matrix. Dilution of samples beyond the ability of the instrument to detect the internal standards is not recommended. Analyses performed at a dilution level requiring additional internal standard to be added after the extraction step in order to quantitate results has been shown to yield results with a significant low bias. As a result, data have been reported that exceed the calibration range and are qualified as estimated.

The PFC method is an isotope dilution method where the internal standards are added prior to extraction and used to quantitate results; therefore, the use of dilution factors is inappropriate. Application of dilution factors would yield results that are artificially high. Reporting limits and method detection limits are not adjusted for dilutions unless samples are fortified with additional internal standard, which is not recommended.

Internal standard abundances may vary depending upon both recovery and the dilution at which the analysis is performed. This is an inherent feature of the isotope dilution technique and is not indicative of bias to the reported results.

Receipt

The following report contains the analytical results for two solid samples received at TestAmerica Denver on December 11, 2010, according to documented sample acceptance procedures. The samples were received in good condition at a temperature of 3.4°C. No anomalies were encountered during sample receipt.

PFC

Samples AB14 (280-10749-5) and AB5 (280-10749-6) were analyzed for PFC in accordance with SOP DV-LC-0012. The samples were prepared on 12/17/2010 and analyzed on 12/21/2010.

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the method. Due to high concentrations of target analytes, samples AB14 (280-10749-5), AB14 (280-10749-5 MS), AB14 (280-10749-5 MSD) and AB5 (280-10749-6) had to be analyzed at 5X dilutions. Internal standards (IS) were not fortified, therefore, the IS percent recoveries need to be multiplied by 5 and the MDLs/RLs were not updated due to limitations in the software.

Perfluorobutanoic acid (PFBA) was detected in method blank MB 280-45723/1-A at a level that was less than one half the reporting limit; therefore, corrective action was deemed unnecessary. The value should be considered an estimate, and has been flagged "J". If the associated samples reported results above the MDL and/or RL, the results have been "B" flagged.

The MS/MSD associated with prep batch 280-45723 was performed on sample AB14 (280-10749-5). The MS and MSD exhibited spike compound recoveries outside the control limits for several compounds. The presence of the '4' qualifier in the report indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

Internal standard responses in samples AB14 (280-10749-5), AB14 (280-10749-5 MS), AB14 (280-10749-5 MSD) and AB5 (280-10749-6) exhibited recoveries outside the control limits in analytical batch 280-46440. This is an isotope dilution method and the samples were diluted 5X without fortifying the internal standards. This means the internal standards were also diluted and the recoveries could not be accurately calculated. The Method Blank, LCS and LCSD are in control, indicating that the sample matrix may be causing the low recoveries; therefore, corrective action was deemed unnecessary.

Refer to the QC report for details.

No other difficulties were encountered during the PFC analyses.

All other quality control parameters were within the acceptance limits.

Percent Solids

Samples AB14 (280-10749-5) and AB5 (280-10749-6) were analyzed for percent solids in accordance with EPA SW846 3550C. The

samples were analyzed on 12/13/2010.

No difficulties were encountered during the % solids analyses.

Quality control parameters were within the acceptance limits.

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver

Job No.: 280-10749-2

SDG No.:

Instrument ID: LC_LCMS5

Analysis Batch Number: 41896

Lab Sample ID: STD00025 280-41896/1 IC

Client Sample ID:

Date Analyzed: 11/19/10 12:11

Lab File ID: pc50K19029.d

GC Column: Gemini-NX

ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION	
		REASON	ANALYST DATE
Perfluorobutanoic acid (PFBA)	3.62	Baseline	williamst 11/22/10 08:44
Perfluorobutane Sulfonate (PFBS)	4.87	Baseline	williamst 11/22/10 08:44
Perfluorohexane Sulfonate (PFHxS)	5.75	Baseline	williamst 11/22/10 08:44

Lab Sample ID: STD1250 280-41896/9 IC

Client Sample ID:

Date Analyzed: 11/19/10 13:53

Lab File ID: pc50K19037.d

GC Column: Gemini-NX

ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION	
		REASON	ANALYST DATE
Perfluorobutanoic acid (PFBA)	3.69	Baseline	williamst 11/22/10 08:46

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver

Job No.: 280-10749-2

SDG No.:

Instrument ID: LC_LCMS5 Analysis Batch Number: 46440

Lab Sample ID: MB 280-45723/1-A Client Sample ID:

Date Analyzed: 12/21/10 14:03

Lab File ID: pc50L21033.d

GC Column: Gemini-NX

ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION	
		REASON	ANALYST DATE
Perfluorobutanoic acid (PFBA)	3.75	Baseline	williamst 12/21/10 14:47

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-10749-2

SDG No.:

Instrument ID: LC LCMS5 Analysis Batch Number: 41896

Lab Sample ID: STD00025 280-41896/1 IC Client Sample ID:

Date Analyzed: 11/19/10 12:11 Lab File ID: pc50K19029.d GC Column: Gemini-NX ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	3.62	Baseline	williamst	11/22/10 08:44
Perfluorobutane Sulfonate (PFBS)	4.87	Baseline	williamst	11/22/10 08:44
Perfluorohexane Sulfonate (PFHxS)	5.75	Baseline	williamst	11/22/10 08:44

Lab Sample ID: STD1250 280-41896/9 IC Client Sample ID:

Date Analyzed: 11/19/10 13:53 Lab File ID: pc50K19037.d GC Column: Gemini-NX ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	3.69	Baseline	williamst	11/22/10 08:46

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-10749-2

SDG No.:

Instrument ID: LC_LCMS5 Analysis Batch Number: 46440

Lab Sample ID: MB 280-45723/1-A Client Sample ID:

Date Analyzed: 12/21/10 14:03 Lab File ID: pc50L21033.d GC Column: Gemini-NX ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	3.75	Baseline	williamst	12/21/10 14:47

SAMPLE SUMMARY

Client: Dalton Utilities

Job Number: 280-10749-2

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
280-10749-5	AB14	Solid	12/10/2010 0920	12/11/2010 0930
280-10749-6	AB5	Solid	12/10/2010 0943	12/11/2010 0930

EXECUTIVE SUMMARY - Detections

Client: Dalton Utilities

Job Number: 280-10749-2

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method
280-10749-5	AB14				
Perfluorobutane Sulfonate (PFBS)		2100	1.4	ug/Kg	DV-LC-0012
Perfluorobutanoic acid (PFBA)		180	1.4	ug/Kg	DV-LC-0012
Perfluorodecanoic acid (PFDA)		390	1.4	ug/Kg	DV-LC-0012
Perfluorododecanoic acid (PFDoA)		110	3.6	ug/Kg	DV-LC-0012
Perfluoroheptanoic acid (PFHpA)		48	1.4	ug/Kg	DV-LC-0012
Perfluorohexane Sulfonate (PFHxS)		16	1.4	ug/Kg	DV-LC-0012
Perfluorohexanoic acid (PFHxA)		190	1.4	ug/Kg	DV-LC-0012
Perfluorononanoic acid (PFNA)		75	1.4	ug/Kg	DV-LC-0012
Perfluorooctane Sulfonamide (FOSA)		700	1.4	ug/Kg	DV-LC-0012
Perfluorooctanoic acid (PFOA)		330	1.4	ug/Kg	DV-LC-0012
Perfluorooctane Sulfonate (PFOS)		720	1.4	ug/Kg	DV-LC-0012
Perfluoropentanoic acid (PFPA)		140	1.4	ug/Kg	DV-LC-0012
Perfluorotetradecanoic acid (PFTeA)		11	3.6	ug/Kg	DV-LC-0012
Perfluorotridecanoic Acid (PFTriA)		77	1.4	ug/Kg	DV-LC-0012
Perfluoroundecanoic acid (PFUnA)		220	1.4	ug/Kg	DV-LC-0012
Percent Moisture		45	0.10	%	D-2216

280-10749-6	AB5				
Perfluorobutane Sulfonate (PFBS)		1300	1.6	ug/Kg	DV-LC-0012
Perfluorobutanoic acid (PFBA)		110	1.6	ug/Kg	DV-LC-0012
Perfluorodecanoic acid (PFDA)		350	1.6	ug/Kg	DV-LC-0012
Perfluorododecanoic acid (PFDoA)		130	3.9	ug/Kg	DV-LC-0012
Perfluoroheptanoic acid (PFHpA)		52	1.6	ug/Kg	DV-LC-0012
Perfluorohexane Sulfonate (PFHxS)		14	1.6	ug/Kg	DV-LC-0012
Perfluorohexanoic acid (PFHxA)		160	1.6	ug/Kg	DV-LC-0012
Perfluorononanoic acid (PFNA)		76	1.6	ug/Kg	DV-LC-0012
Perfluorooctane Sulfonamide (FOSA)		390	1.6	ug/Kg	DV-LC-0012
Perfluorooctanoic acid (PFOA)		310	1.6	ug/Kg	DV-LC-0012
Perfluorooctane Sulfonate (PFOS)		730	1.6	ug/Kg	DV-LC-0012
Perfluoropentanoic acid (PFPA)		100	1.6	ug/Kg	DV-LC-0012
Perfluorotetradecanoic acid (PFTeA)		10	3.9	ug/Kg	DV-LC-0012
Perfluorotridecanoic Acid (PFTriA)		69	1.6	ug/Kg	DV-LC-0012
Perfluoroundecanoic acid (PFUnA)		240	1.6	ug/Kg	DV-LC-0012
Percent Moisture		51	0.10	%	D-2216

METHOD SUMMARY

Client: Dalton Utilities

Job Number: 280-10749-2

Description	Lab Location	Method	Preparation Method
Matrix: Solid			
Perfluorinated Hydrocarbons	TAL DEN	TAL-DEN DV-LC-0012	
Leaching procedure for PFCs	TAL DEN		TAL-DEN PFC leach
ASTM D-2216	TAL DEN	ASTM D-2216	

Lab References:

TAL DEN = TestAmerica Denver

Method References:

ASTM = ASTM International

TAL-DEN = TestAmerica Laboratories, Denver, Facility Standard Operating Procedure.

METHOD / ANALYST SUMMARY

Client: Dalton Utilities

Job Number: 280-10749-2

Method	Analyst	Analyst ID
TAL-DEN DV-LC-0012	Williams, Teresa L	TLW
ASTM D-2216	Berry III, Paul B	PBB

Analytical Data

Client: Dalton Utilities

Job Number: 280-10749-2

Client Sample ID: AB14

Lab Sample ID: 280-10749-5

Date Sampled: 12/10/2010 0920

Client Matrix: Solid

% Moisture: 45.4

Date Received: 12/11/2010 0930

DV-LC-0012 Perfluorinated Hydrocarbons

Method:	DV-LC-0012	Analysis Batch: 280-46440	Instrument ID:	LC_LCMS5
Preparation:	PFC leach	Prep Batch: 280-45723	Lab File ID:	pc50L21035.d
Dilution:	1.0		Initial Weight/Volume:	10.12 g
Date Analyzed:	12/21/2010 1429		Final Weight/Volume:	20 mL
Date Prepared:	12/17/2010 0915		Injection Volume:	25 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Perfluorobutane Sulfonate (PFBS)		2100		0.25	1.4
Perfluorobutanoic acid (PFBA)		180	B	0.22	1.4
Perfluorodecanoic acid (PFDA)		390		0.49	1.4
Perfluorododecanoic acid (PFDoA)		110		1.0	3.6
Perfluoroheptanoic acid (PFHpA)		48		0.22	1.4
Perfluorohexane Sulfonate (PFHxS)		16		0.22	1.4
Perfluorohexanoic acid (PFHxA)		190		0.27	1.4
Perfluorononanoic acid (PFNA)		75		0.40	1.4
Perfluorooctane Sulfonamide (FOSA)		700		0.18	1.4
Perfluorooctanoic acid (PFOA)		330		0.42	1.4
Perfluorooctane Sulfonate (PFOS)		720		0.25	1.4
Perfluoropentanoic acid (PFPA)		140		0.43	1.4
Perfluorotetradecanoic acid (PFTeA)		11		1.8	3.6
Perfluorotridecanoic Acid (PFTriA)		77		0.58	1.4
Perfluoroundecanoic acid (PFUnA)		220		0.58	1.4
Surrogate	%Rec	Qualifier	Acceptance Limits		
13C8 PFOA	86		57 - 153		
13C8 PFOS	87		70 - 130		

Analytical Data

Client: Dalton Utilities

Job Number: 280-10749-2

Client Sample ID: AB5

Lab Sample ID: 280-10749-6

Date Sampled: 12/10/2010 0943

Client Matrix: Solid

% Moisture: 51.5

Date Received: 12/11/2010 0930

DV-LC-0012 Perfluorinated Hydrocarbons

Method: DV-LC-0012

Analysis Batch: 280-46440

Instrument ID:

LC_LCMS5

Preparation: PFC leach

Prep Batch: 280-45723

Lab File ID:

pc50L21038.d

Dilution: 1.0

Initial Weight/Volume: 10.52 g

Date Analyzed: 12/21/2010 1507

Final Weight/Volume: 20 mL

Date Prepared: 12/17/2010 0915

Injection Volume: 25 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Perfluorobutane Sulfonate (PFBS)		1300		0.27	1.6
Perfluorobutanoic acid (PFBA)		110	B	0.24	1.6
Perfluorodecanoic acid (PFDA)		350		0.53	1.6
Perfluorododecanoic acid (PFDoA)		130		1.1	3.9
Perfluoroheptanoic acid (PFHpA)		52		0.24	1.6
Perfluorohexane Sulfonate (PFHxS)		14		0.24	1.6
Perfluorohexanoic acid (PFHxA)		160		0.29	1.6
Perfluorononanoic acid (PFNA)		76		0.43	1.6
Perfluorooctane Sulfonamide (FOSA)		390		0.19	1.6
Perfluorooctanoic acid (PFOA)		310		0.45	1.6
Perfluorooctane Sulfonate (PFOS)		730		0.27	1.6
Perfluoropentanoic acid (PFPA)		100		0.47	1.6
Perfluorotetradecanoic acid (PFTeA)		10		2.0	3.9
Perfluorotridecanoic Acid (PFTriA)		69		0.63	1.6
Perfluoroundecanoic acid (PFUnA)		240		0.63	1.6

Surrogate	%Rec	Qualifier	Acceptance Limits
13C8 PFOA	85		57 - 153
13C8 PFOS	91		70 - 130

Analytical Data

Client: Dalton Utilities

Job Number: 280-10749-2

General Chemistry

Client Sample ID: AB14

Lab Sample ID: 280-10749-5

Client Matrix: Solid

Date Sampled: 12/10/2010 0920

Date Received: 12/11/2010 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	45		%	0.10	0.10	1.0	D-2216

Analysis Batch: 280-44818 Date Analyzed: 12/13/2010 0853 DryWt Corrected: N

Analytical Data

Client: Dalton Utilities

Job Number: 280-10749-2

General Chemistry

Client Sample ID: AB5

Lab Sample ID: 280-10749-6

Client Matrix: Solid

Date Sampled: 12/10/2010 0943

Date Received: 12/11/2010 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	51		%	0.10	0.10	1.0	D-2216

Analysis Batch: 280-44818 Date Analyzed: 12/13/2010 0853 DryWt Corrected: N